Competitive Advantages of Elderberry Extract Products and Outlook for Future Market Development

Overview

Elderberry extract is a natural plant extract with application value spanning medicine, healthcare, food, cosmetics and other fields. It belongs to the *Sambucus* genus of the Caprifoliaceae family. The unique pharmacological effects and functions of its core active ingredients (anthocyanins, flavonols, phenolic acids, vitamin C, etc.) have been verified by global multi-center clinical studies and thousands of academic papers. It shows significant advantages in anti-viral, immune regulation and anti-oxidation fields, and is known as "natural antiviral agent" and "the Western Banlangen". Its application history dates back to ancient Greece 2,500 years ago, and it has been widely used in European folk medicine to treat colds, fevers and other ailments.

In recent years, with the popularization of the global "natural health" concept, the upgrading of consumers' immune health demands, and the continuous expansion of application scenarios after elderberry was approved as a new food raw material in China, market demand has maintained a steady growth trend. Based on the current industry situation, this report systematically analyzes the core competitive advantages of elderberry extract products, comprehensively predicts the future development trend of the market, and provides scientific references for industry practitioners and investors with accurate industry data and professional interpretations, highlighting the professionalism, systematicness and logic of the content.

I. Core Competitive Advantages of Elderberry Extract Products

The core competitiveness of elderberry extract stems from its natural product attributes, technical barriers, diversified application scenarios and complete industrial chain synergy, forming obvious differentiation from synthetic substitutes and other plant extracts and building an irreplicable competitive barrier. The analysis is carried out from four dimensions with data support and logical stratification to ensure objectivity and rigor.

(I) Inherent Product Advantages: Outstanding Natural Activity & High Safety & Controllability

The core competitive foundation of elderberry extract lies in the unique efficacy and high safety of its natural active ingredients, which is also the core barrier distinguishing it from synthetic anti-viral and immune-regulating products and the key support for market recognition. It also conforms to the global "clean label" and green consumption trend.

Firstly, the synergistic effect of active ingredients is remarkable.

Various characteristic components in elderberry extract, such as anthocyanins, flavonols, phenolic acids, vitamin C and dietary fiber, achieve multiple effects including anti-viral, immune regulation, anti-oxidation, anti-inflammation, cardiovascular health improvement and blood sugar regulation by inhibiting inflammatory signaling pathways such

as NF-κB, scavenging free radicals, stimulating immune cell activity and blocking viral invasion. Among them, the antioxidant capacity of anthocyanins is 3.5 times that of vitamin E and 20 times that of vitamin C. Flavonoids can effectively inhibit hemagglutinin and enzyme activities that damage cell membranes. Their synergistic effect not only improves efficacy stability but also reduces the side-effect risk of single ingredients, making it especially suitable for mild conditioning of special groups such as infants and the elderly. In addition, polyphenols in elderberry can be used as natural colorants to replace some synthetic pigments, further broadening its application boundaries.

Secondly, clinical verification is sufficient and reliable.

Clinical studies show that elderberry extract has a significant effect in relieving cold and flu symptoms: a study of 60 influenza patients found that those who took 15 mL of elderberry syrup four times a day experienced symptom improvement in only 2–4 days, much shorter than 7–8 days in the control group. Another study of 312 air travelers showed that daily capsules containing 300 mg of elderberry extract can effectively shorten the course of disease and relieve cold symptoms. Its immune regulation effect is mild and non-dependent. Compared with synthetic immune enhancers, it is more suitable for long-term daily conditioning with higher user compliance.

In terms of safety, fully processed (cooked, dried) elderberry extract can completely remove toxic components such as cyanogenic glycosides in raw berries. The incidence of adverse reactions for long-term use is only 1.9%, far lower than 14.7% of synthetic anti-viral and immune-regulating products, with no obvious addiction. It has been widely used in over-the-counter drugs, dietary supplements and other products in Europe, America, Japan, South Korea and other markets, meeting global consumers' demand for "natural, safe and non-irritating" health products. In addition, its natural attributes conform to the concept of green development.

The active ingredients of elderberry extract are all derived from natural berries, meeting the requirements of "carbon neutrality" and green production. Against the background of increasingly stringent global environmental policies, it has more significant competitive advantages than chemical synthetic substitutes. Meanwhile, elderberry planting can effectively improve the soil environment and conserve water resources, realizing ecological and environmental protection value and further strengthening the natural advantages of the product.

(II) Technical Barrier Advantages: Upgraded Extraction Technology & High Product Standardization

The advancement of extraction technology and product standardization are key factors determining the quality and market competitiveness of elderberry extract. At present, leading enterprises in the industry have formed mature technical barriers, mainly reflected in the upgrading of extraction and purification technology and the improvement of the standardization system. Benefiting from the implementation of China's national standard *Technical Specifications for Plant Extract Production Process*, the industry has further promoted quality and efficiency improvement.

Firstly, leading extraction and purification technology.

Mainstream enterprises adopt advanced processes such as supercritical CO_2 extraction, microwave-assisted

extraction, membrane separation and purification, and fractional extraction to accurately separate and purify active ingredients of elderberry, effectively improving product purity and activity retention rate. Among them, elderberry extract produced by supercritical CO_2 extraction can achieve anthocyanin purity of over 90%, 20–30 percentage points higher than the traditional water extraction and alcohol precipitation method (60%–70% purity), with no solvent residue and better product quality. Fractional extraction technology can increase the purity of flavonols to over 85%, breaking the long-term technical bottleneck of high-purity active ingredient extraction in the international elderberry industry and enabling China's high-end elderberry raw material processing technology to reach the world's leading level. In view of the instability of elderberry anthocyanins, leading enterprises have achieved stable retention of anthocyanins through process innovation, providing technical support for its wide application in food and cosmetics.

Secondly, a complete standardization system.

With the official implementation of *Technical Specifications for Plant Extract Production Process* in China, the standard system of elderberry extract has been continuously upgraded. Leading enterprises have realized full-process standardized control from raw material planting to product delivery, accurately controlling the content of various characteristic components and ensuring batch-to-batch consistency. Among them, elderberry extract produced in high-quality planting bases in China can reach an anthocyanin content of 2.5%, 56% higher than the industry average, becoming the core supply source for the high-end market. Meanwhile, leading technical teams in the industry have actively participated in the drafting and formulation of industry standards related to elderberry extract, promoting the industry's transformation from "extensive development" to "standardized quality improvement" and further regulating the industry development order.

Technical barriers have further widened the competitive gap among enterprises. At present, less than 10% of domestic enterprises have advanced extraction technology and standardized production capacity. Products of such enterprises can achieve a premium of more than 40% compared with small and medium-sized manufacturers, forming a market pattern of "high quality with high price" and effectively resisting price competition from low-end products. Meanwhile, the application of new technologies such as freeze stabilization and microcapsule embedding can retain elderberry active ingredients to the greatest extent and extend product shelf life. Among them, elderberry powder produced by freeze-drying has high purity and good solubility, and has become the core raw material for high-end dietary supplements and cosmetics. The exploration and application of new technologies such as synthetic biology and gene editing have further raised technical barriers, provided possibilities for reducing production costs and realizing industrialized mass production of core active ingredients, and helped leading enterprises build long-term competitive advantages.

(III) Application Scenario Advantages: Extensive Cross-Border Integration & Diversified Demand Coverage

Another core competitive advantage of elderberry extract lies in its diversified application scenarios, breaking the application limitations of single plant extracts, covering medicine, healthcare, food, cosmetics and other high-

demand fields, forming a demand support system of "one product for multiple scenarios" and effectively dispersing market risks caused by demand fluctuations in a single field. Meanwhile, dosage form innovation has further expanded the audience range.

Specifically, healthcare and medicine are its core application scenarios. In the cold & flu category, elderberry extract remains a popular raw material, with related product sales alone reaching 27.08 million US dollars, ranking first among similar raw materials. Its anti-viral and immune-regulating effects are widely recognized by global consumers, and it has become one of the core ingredients of dietary supplements. In the domestic market, elderberry products are mostly for infants and young children, mainly in the form of soft candies and liquids, with both fun and palatability. Related products of brands such as Vitatree (New Zealand) and Enervite (Australia) have achieved outstanding sales performance. In European and American markets, elderberry extract is widely used in over-the-counter drugs for colds and flu, with commercial preparations including liquids, capsules, powders and other forms, with positive clinical application feedback. In 2025, the consumption of elderberry extract in China's healthcare field increased by 48% year-on-year. Monthly sales of elderberry-based functional foods launched by domestic brands such as By-health and Infinitus all exceeded 250,000 pieces, directly driving the growth of raw material demand.

Application scenarios in the food field continue to expand. With elderberry approved as a new food raw material in China, it has officially entered the mass consumption fields such as ordinary food, beverages and dairy products from the identity of imported dietary supplements. It can be used as an additive in fruit juice, jam, wine, tea drinks, yogurt, jelly and other products, which can not only improve the nutritional value of products, but also play a natural coloring role, conforming to the global clean label trend. Among them, soft candies are expected to become a hotspot for elderberry application. Their color and taste are highly compatible with the natural characteristics of elderberry. Innovative formulas such as "elderberry + vitamin C", "elderberry + zinc" and "elderberry + probiotics" further enrich product forms and meet the needs of different consumer groups.

Application potential in the cosmetics field is gradually released. Relying on its powerful anti-oxidation and anti-inflammation effects, elderberry extract is widely used in anti-aging, soothing and whitening cosmetics, which can effectively scavenge free radicals, repair skin barriers and relieve skin inflammation, suitable for various skin types such as sensitive skin and mature skin. International first-line brands such as Estée Lauder and Lancôme have applied it in anti-aging and soothing series products, and domestic brands such as Proya and Winona have gradually laid out related products, promoting the growth of demand for elderberry extract in the cosmetics field. In addition, its application in the pet healthcare field is gradually emerging. It can be used as a natural antibacterial and immune-regulating ingredient to replace antibiotics for pet intestinal health conditioning. With the promotion of the global "antibiotic ban", demand is on the rise.

(IV) Industrial Chain Synergy Advantages: Complete Upstream and Downstream Layout & Strong Cost Control Ability

A complete industrial chain layout is an important support for elderberry extract to maintain competitive advantages. At present, leading enterprises have realized the whole industrial chain synergy from raw material planting, extraction and processing to terminal application, building an integrated model of "planting-extraction-R&D-sales", which can effectively control production costs and ensure product quality stability, forming sustainable competitive advantages. Similar to the large-scale development model of small berry industries such as aronia in China, industrial upgrading is realized relying on high-quality planting bases.

At the raw material end, core enterprises have established standardized planting bases in temperate and subtropical suitable areas in China and overseas high-quality producing areas, with a total area of more than 50,000 mu. The "enterprise + cooperative + farmer" model is adopted to uniformly provide high-quality seedlings and planting technical guidance, and strictly control the use of pesticides and chemical fertilizers in the planting process to ensure stable content of raw material active ingredients. Meanwhile, direct procurement reduces intermediate links, and raw material costs are 15%–25% lower than those of small and medium-sized manufacturers. Relying on superior climatic conditions, some producing areas in China produce high-quality elderberry berries with anthocyanin content higher than the international average, becoming the core raw material supply base of domestic elderberry extract, similar to the aronia planting base of Lingshoushan Company, providing solid support for deep processing.

At the processing end, enterprises further reduce unit production costs through large-scale production and process optimization. For example, the large-scale application of supercritical CO_2 extraction process reduces the processing cost per ton of products by 10%; the promotion of freeze stabilization method improves product added value while reducing cost waste caused by active ingredient loss; the optimization of membrane separation and purification process further improves extraction efficiency and reduces energy consumption.

At the R&D end, enterprises conduct in-depth cooperation with universities and research institutes, focusing on the in-depth development of elderberry active ingredients and expansion of new application scenarios, laying out technical reserves in advance, reducing R&D costs while continuously improving product added value. For example, the R&D of high-purity anthocyanin extract for the high-end medical field further broadens the high-end application scenarios of products; the R&D of stabilized anthocyanin products for the food field solves the stability problem in the application process.

At the sales end, leading enterprises have built a global sales network, directly connecting with terminal enterprises in medical, healthcare, food, cosmetics and other fields, reducing dealer links, which not only improves profit margins but also quickly responds to changes in market demand. In addition, the synergistic linkage of upstream and downstream industrial chains can achieve precise matching of raw material supply, production and processing, and market demand, effectively resisting risks such as raw material price fluctuations and market demand changes, and building sustainable competitive advantages.

II. Future Development Outlook of the Elderberry Extract Market

Combined with multiple factors such as the upgrading of global health concepts, policy support, technological innovation and the expansion of application scenarios, the future elderberry extract market will show a development trend of "steady growth, structural optimization, prominent high-end orientation and global layout". Meanwhile, the industry also faces certain challenges, and overall development opportunities outweigh challenges. It is estimated that the compound annual growth rate of the global elderberry extract market size will remain at 8.2%–10.0% from 2026 to 2030, with huge market potential.

(I) Continuous Expansion of Market Size & Optimizing Demand Structure

In the next five years, the global elderberry extract market size will continue to rise, with core drivers mainly from three aspects:

Firstly, the continuous growth of immune health and anti-viral demand.

The proportion of sensitive and immunocompromised people worldwide continues to rise. Meanwhile, the normalization of respiratory diseases such as colds and flu promotes the continuous growth of demand for elderberry extract in the fields of immune regulation and anti-viral. In addition, with consumers' increasing attention to cardiovascular health and intestinal health, the diversified effects of elderberry extract will further release demand, making it one of the core raw materials for natural health products.

Secondly, the concepts of "natural health" and "clean label" are deeply rooted in people's hearts.

Consumer demand for functional foods and natural cosmetic products continues to upgrade. As a natural, safe and multi-functional plant raw material, elderberry extract conforms to consumer demand trends and will further drive demand growth in healthcare, food and cosmetics fields. It is expected that by 2030, the demand proportion of these three fields will exceed 60%. Especially in China, after elderberry is approved as a new food raw material, it will move from a niche herbal supplement to the core raw material of mainstream functional foods and beverages, further opening up market space.

Thirdly, the continuous advancement of international layout.

China's elderberry extract export volume increases year by year, having been exported to more than 30 countries and regions such as Europe, America, Japan, South Korea and Southeast Asia. With the deepening of "Belt and Road" traditional Chinese medicine cooperation and the integration of China's plant extract standards with international standards, the export market will further expand. It is estimated that by 2030, China's elderberry extract export value will exceed 90 million US dollars. It is noteworthy that China's plant extract exports generally face the problem of "increasing volume but decreasing price". In 2024, China's plant extract export volume increased by 21.3% year-on-year, but the total export value decreased by 7.7% year-on-year. Elderberry extract exports also face similar dilemmas, which need to be improved by enhancing product added value in the future.

In terms of demand structure, it will show a development trend of "high-end and refined". The demand growth rate of high-purity (anthocyanin content over 90%, flavonol content over 85%) and standardized elderberry extract will

be significantly higher than that of ordinary products, mainly used in high-end medicine, first-line cosmetics and high-end dietary supplements. Meanwhile, segmented scenario demand will be further refined. Mild immune-regulating raw materials for infants, anti-aging and soothing raw materials for workplace people, mild intestinal conditioning raw materials for the elderly, and antibiotic-free healthcare raw materials for pets will become new growth hotspots in the market. In addition, low-sugar and sugar-free elderberry extract products will be more favored by consumers to avoid the inhibitory effect of high sugar on efficacy.

(II) Industrial Upgrading Driven by Technological Innovation & Continuous Improvement of Core Competitiveness

In the future, technological innovation will become the core driving force for the upgrading of the elderberry extract industry, focusing on three directions. Relying on the improvement of industry standards, it will promote the high-quality development of the industry:

Firstly, iterative upgrading of extraction and purification technologies.

Advanced processes such as supercritical CO_2 extraction, microwave-assisted extraction and membrane separation and purification will be further popularized. Meanwhile, the application of new separation technologies such as molecular distillation will further improve active ingredient purity and extraction efficiency, reducing production costs. The optimization of new extraction methods such as aqueous two-phase extraction will reduce the use of organic solvents and improve product environmental protection and safety. In addition, technological breakthroughs in the instability of elderberry anthocyanins will further broaden their application scenarios and improve product added value.

Secondly, in-depth application of new technologies.

New technologies such as synthetic biology and gene editing will be gradually applied to elderberry extract production to realize industrialized mass production of core active ingredients such as anthocyanins and flavonols, breaking the dependence on natural raw materials, greatly reducing production costs, providing support for reasonable product prices and further expanding market coverage. Meanwhile, high-yield and high-active-ingredient elderberry varieties cultivated through gene editing technology will improve raw material quality and ensure product quality from the source.

Thirdly, focusing on R&D of new effects and new applications.

Scientific research institutions and enterprises will further explore new pharmacological effects of elderberry extract and expand its application in anti-radiation, anti-tumor, air purification assistance and other fields. Meanwhile, more convenient application forms such as microcapsule preparations, nano-scale extracts and freeze-dried powders will be developed to adapt to application needs in different scenarios and improve product added value. For example, microencapsulated elderberry extract can effectively extend the shelf life of active ingredients and adapt to various product forms such as solid beverages and baked foods.

In addition, the product standardization system will be further improved. With the implementation of China's *Technical Specifications for Plant Extract Production Process* and the gradual introduction of stricter product standards in various countries, the quality control of elderberry extract will be more standardized, promoting benign industry competition. Leading enterprises with advanced technology and complete standardization systems will occupy a larger market share, and industry concentration will continue to increase. Meanwhile, the continuous improvement of standardization will help China's elderberry extract break through international trade barriers and improve export competitiveness.

(III) Accelerated Global Layout & Differentiated Development of Regional Markets

With the advancement of global trade liberalization and the deepening internationalization of traditional Chinese medicine, the global layout of elderberry extract will be further accelerated, and regional markets will show differentiated development trends. The demand characteristics and market potential of different regions will gradually emerge:

As traditional core markets, Europe and the United States focus demand on medicine, high-end cosmetics and dietary supplements, with high requirements for product purity and standardization, and will maintain steady growth in the future. Meanwhile, stricter environmental policies in Europe and the United States will further promote the transformation from synthetic substitutes to natural extracts, providing greater market space for elderberry extract. In addition, European and American consumers have a high awareness of elderberry, and the market is mature, making it the core consumer market for high-end products.

As an emerging growth pole, the Asia-Pacific market, especially China, Japan, South Korea and other countries, will lead global demand growth. On the one hand, the popularization of the domestic natural health concept and the approval of elderberry as a new food raw material will rapidly release market demand. Relying on the inheritance and development of traditional Chinese medicine culture, China will gradually transform from raw material export to high value-added product export, enhancing its voice in the global industrial chain. Domestic high-quality planting bases will become the core supply source of global elderberry extract. On the other hand, the Japanese and Korean markets have strong demand for natural cosmetics and dietary supplements, and the application scenarios of elderberry extract will continue to expand with huge market potential.

In addition, with economic development and improved residents' health awareness, demand for elderberry extract in emerging markets such as Southeast Asia, Latin America and Africa will gradually rise, becoming new highlights of future market growth. Leading enterprises will accelerate the layout of emerging markets, expand sales channels and improve market coverage. Meanwhile, according to the demand differences of different regional markets, enterprises will optimize product formulas and specifications to adapt to the consumption habits and regulatory requirements of regional markets and promote the refined development of global layout.

(IV) Industry Challenges and Countermeasures

Despite the broad development prospects of the elderberry extract market, the industry still faces four major challenges, which require industry practitioners to respond collaboratively to promote high-quality industrial development:

Firstly, unstable raw material supply.

Elderberry planting is greatly affected by natural conditions such as climate and soil, with a long planting cycle, prone to raw material shortage and price fluctuations. Meanwhile, some growers lack standardized planting technology, leading to uneven raw material quality and affecting product quality stability, which is also a common problem in the current small berry industry.

Secondly, increasingly fierce industry competition.

Some small and medium-sized manufacturers lack core technology and produce low-purity and low-quality products using traditional processes, disrupting market order with low-price competition, which not only affects product purity and safety but also damages the overall quality and reputation of the industry.

Thirdly, prominent international market trade barriers.

Some countries continuously raise import testing standards for plant extracts, increasing export difficulties. Meanwhile, the prominent problem of "increasing volume but decreasing price" in China's elderberry extract exports requires improvement of product added value and lack of international competitiveness.

Fourthly, insufficient investment in core technology R&D.

Some enterprises rely on traditional extraction processes, resulting in serious product homogeneity and difficulty in meeting high-end market demand. Meanwhile, insufficient R&D investment in new effects and technologies of elderberry restricts industrial upgrading and development.

In response to the above challenges, industry practitioners can take countermeasures from four aspects:

First, strengthen raw material base construction.

Promote standardized planting technology, cultivate high-yield and high-active-ingredient elderberry varieties, expand the planting scale of high-quality producing areas, establish a raw material traceability system to ensure the stability and quality controllability of raw material supply, drawing on the large-scale and standardized development experience of domestic aronia planting bases. Meanwhile, strengthen cooperation with growers to improve planting technology and standardize planting processes.

Second, increase investment in technology R&D.

Break through core technical barriers, focus on R&D of high-purity and high value-added products, improve product competitiveness and avoid low-price competition. Strengthen cooperation with universities and research institutes to accelerate the transformation and application of new technologies and processes, solve product homogeneity, improve product added value and solve the export dilemma of "increasing volume but decreasing price".

Third, strengthen international cooperation and exchanges.

Familiarize with import testing standards of various countries, promote products to meet international norms, actively participate in the formulation of international standards, enhance the international influence of China's elderberry extract, expand high-end export markets, promote product transformation to high value-added and branding, and improve export competitiveness.

Fourth, promote collaborative upgrading of the industrial chain.

Deepen cooperation between upstream and downstream enterprises to achieve precise matching of raw material supply, production and processing, and market demand. Promote industry integration, improve industry concentration, eliminate backward production capacity, and promote the industry to develop towards high-end, standardized and green.

III. Summary

With core competitive advantages of outstanding natural activity, high technical barriers, diversified application scenarios and complete industrial chain synergy, elderberry extract occupies an important position in the natural plant extract industry, conforming to the global development trend of natural health and green environmental protection. Its multi-field efficacy advantages and ecological value further enhance product market competitiveness. Meanwhile, relying on the policy dividend of being approved as a new food raw material, market potential continues to be released.

In the future, with the continuous promotion of technological innovation, continuous expansion of application scenarios and accelerated implementation of global layout, the elderberry extract market will achieve steady growth, the industry structure will be continuously optimized, high-end, standardized and globalized will become the mainstream of development, and industry pain points such as export "increasing volume but decreasing price" and unstable raw material supply will be gradually solved.

For industry practitioners, they should focus on core technology R&D, improve industrial chain layout, accurately grasp changes in market demand, deeply cultivate segmented fields, and enhance product added value and brand influence. For investors, they can focus on enterprises with technical advantages, standardized production capacity and global layout, especially those with advantages in high-purity elderberry extract R&D and high-quality raw material base layout to seize industry development opportunities.

Overall, the elderberry extract industry has huge development potential in the future. It is expected to achieve greater breakthroughs in medicine, healthcare, food, cosmetics and other fields, inject new impetus into the high-quality development of the natural plant extract industry, help China's plant extract industry enhance its global voice, and promote the internationalization process of traditional Chinese medicine.